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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,435	11/06/2000	Debra D. Wawro	UTSL:058US/MTG	9722

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EXAMINER
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KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/707,435

Applicant(s)

WAWRO ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-70 is/are pending in the application.
- 4a) Of the above claim(s) 36,37,52-60 and 67-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12,14-35,38-51 and 61-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All. b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. This application contains claims 36, 37, 52-60, and 67-70 drawn to an invention nonelected in Paper No. 8. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action.

### *Drawings*

2. The drawings were received on 8/15/03. These drawings are acceptable.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 14, 38-40, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farah (US Patent 5891747) in view of Magnusson et al. (US Patent 5598300).

Farah discloses a waveguide grating device, system, and a method of forming the device comprising a fiber (Fig. 4A, #6) or a rectangular waveguide (Fig. 14, #86) with a cleaved (col. 5, lines 15-17) endface (Fig. 4A, #1', and col. 8, lines 40) made of a dielectric polymer (col. 13, lines 5-7) having a grating that is etched (col. 14, lines 62-65) with the same permittivity as the waveguide (Fig. 4A, #31, and col. 8, lines 44).

However, Farah does not disclose the grating having a waveguide and dielectric-polymer grating as one layer, as different layers in contact, a third dielectric layer in contact with the grating layer comprising metal, a fourth layer, with permittivities of the grating and waveguide layer, periodic structure of the grating, thickness of the waveguide layer, and thickness of the grating layer.

Magnusson et al. teaches a grating (Fig. 5) having a waveguide (Fig. 2, " $\epsilon_{1L}$ "), and dielectric-polymer (col. 2, lines 24-26, and col. 12, lines 48-50) grating layer (Fig. 2, " $\epsilon_{1H}$ ") as one layer (Fig. 2), as different layers in contact (Fig. 5), a third dielectric layer in contact with the grating layer (Fig. 6, " $\epsilon_2$ ") comprising metal (col. 12, lines 48-50), a fourth layer (Fig. 1), with different permittivities of the grating (Fig. 6, " $\epsilon_{3H}$ ") and waveguide layer (Fig. 6, " $\epsilon_1$ "), periodic structure of the grating (Fig. 6, layer with " $\epsilon_{3H}$ "), thickness of the waveguide layer (Fig. 6, " $d_1$ "), and thickness of the grating layer (Fig. 6, " $d_3$ ").

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device and method of Farah with the same layer grating of Magnusson et al., since the grating of Farah and Magnusson et al. are considered equivalent structures known in the art, and one of ordinary skill in the art would have found it obvious to substitute one grating for another. One would be motivated to have the grating of Magnusson et al., since one would be motivated to use the significantly improved filter characteristics for an ideal or near-ideal filter as shown by Magnusson et al. (col. 7, lines 23-25).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device and method of Farah with the different layer grating of Magnusson et al., since the grating of Farah and Magnusson et al. are considered equivalent

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structures known in the art, and one of ordinary skill in the art would have found it obvious to substitute one grating for another. One would be motivated to have the grating of Magnusson et al., since one would be motivated to use the significantly improved filter characteristics when using multiple layers as shown by Magnusson et al. (col. 9, lines 54-56).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device and method of Farah in view of Magnusson et al. with the third and fourth layer, since one would be motivated to use the significantly improved filter characteristics when using multiple layers as shown by Magnusson et al. (col. 9, lines 54-56).

4. Claims 15-19, 22-32, 34, 35, and 61-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. and Baets et al. (US Patent 6191890).

For purposes of being concise, Farah in view of Magnusson et al. suggests a device as recited above. Farah further discloses a source, such as a laser (col. 17, lines 45-50), which is a continuous wave source, at a proximal end (Fig. 1, #10) for signal propagation to a grating (Fig. 4a) with a photodetector (Fig. 1, #12, and col. 6, line 30).

However, Farah does not disclose grating fill factor as a variable parameter nor a grating period less than the wavelength of the signal.

Baets et al. teaches grating fill factor as a variable parameter (col. 8, lines 55). Magnusson et al. further teaches a grating period less than the wavelength of the signal (col. 4, lines 60-67).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Farah in view of Magnusson et al. with the

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grating fill factor as a variable parameter of Baets et al., since one would be motivated to use this parameter to optimize the grating (col. 8, lines 45-60) as implied from Baets et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Farah in view of Magnusson et al. with the grating period less than the wavelength of the signal, since one would be motivated to use this parameter to only allow zero-order signals to propagate and not see other higher-order diffracted waves as implied from Magnusson et al. (col. 4, lines 60-67).

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. and Baets et al. as applied to claim 19 above, and further in view of Layton (US Patent 4753529).

Farah in view of Magnusson et al. and Baets et al. suggests a system as recited above.

However, Farah does not disclose a detector comprising silicon.

Layton teaches a detector comprising silicon (col. 14, lines 10-15).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Farah in view of Magnusson et al. and Baets et al. with a photodetector comprising silicon of Layton, since one would be motivated to use this for low-noise purposes (col. 14, lines 4-15) as implied from Layton, so that none of the actual signal gets lost in the noise.

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6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. and Baets et al. as applied to claim 19 above, and further in view of Epworth (US Patent 4533247).

Farah in view of Magnusson et al. and Baets et al. suggests a system as recited above.

However, Farah does not disclose a detector comprising a human eye.

Epworth teaches a detector comprising a human eye (col. 3, lines 60-63).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Farah in view of Magnusson et al. and Baets et al. with a photodetector comprising a human eye of Epworth, since one would be motivated to keep manufacturing costs down by not needing a machined optical detector if all that is necessary for use is the human eye as implied from Epworth (col. 3, lines 60-65).

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. and Baets et al. as applied to claim 32 above, and further in view of Kunz (US Patent 5442169).

Farah in view of Magnusson et al. and Baets et al. suggests a system as recited above.

However, Farah does not disclose a detector comprising an electrochemical sensor.

Kunz teaches a detector comprising an electrochemical sensor (col. 4, lines 60-69).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Farah in view of Magnusson et al. and Baets et al. with a photodetector comprising an electrochemical sensor of Kunz, since one would

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be motivated to use this for the purpose of the system such as chemical or medical purposes as implied from Kunz (col. 4, lines 60-69).

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. as applied to claim 40 above, and further in view of Grabbe (US Patent 5863449).

Farah in view of Magnusson et al. suggests a method as recited above.

However, Farah does not disclose dipping.

Grabbe teaches dipping (col. 3, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Farah in view of Magnusson et al. with dipping of Grabbe, since one would be motivated to dip to put additional layers on the endface as implied from Grabbe (col. 3, lines 30-40).

9. Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. and Grabbe as applied to claim 41 above, and further in view of Hobbs (WO 97/47997).

Farah in view of Magnusson et al. and Grabbe suggests a method as recited above.

However, Farah does not disclose holographic interferometry or photolithography patterning.

Hobbs further teaches holographic interferometry (Page 1, "Field of Invention") or photolithography patterning (Page 2, top paragraph).



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It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Farah in view of Magnusson et al. and Grabbe with the patterning techniques of Hobbs, since one would be motivated to use these techniques to produce periodic structures as implied from Hobbs (Page 1, "Field of Invention").

10. Claims 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. as applied to claims 40 and 38 above, and further in view of Levenson et al. (US Patent 5291574).

Farah in view of Magnusson et al. suggests a method as recited above.

However, Farah does not disclose spin coating or sputtering.

Levenson et al. teaches spin coating or sputtering (col. 2, lines 33-36).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Farah in view of Magnusson et al. with spin coating of Levenson et al., since one would be motivated to use spin coating or sputtering to add layers as implied from Levenson et al. (col. 2, lines 33-36).

11. Claims 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farah in view of Magnusson et al. as applied to claim 38 above, and further in view of Dimos et al. (US Patent 6096127).

Farah in view of Magnusson et al. suggests a method as recited above.

However, Farah does not disclose thermal evaporation, electron-beam evaporation, or liquid phase epitaxy.

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Dimos et al. teaches thermal evaporation, electron-beam evaporation, or liquid phase epitaxy (col. 1, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Farah in view of Magnusson et al. with the various depositing methods of Dimos al., since these methods are well known in the art and one would be motivated to use these methods to deposit layers (col. 1, lines 30-50) as implied from Dimos et al.

### ***Response to Arguments***

12. Objections to the claims and drawings have been withdrawn in light of the amendments and arguments presented on 8/15/03.

13. Applicant's arguments filed 8/15/03 have been fully considered but they are not persuasive.

With regards to claims 1-12 and 14, the motivation to combine the waveguide layer of Magnusson et al. into Farah still holds since the waveguide layer in between the grating and the other medium for traversing a light beam to the grating is still useful in providing a means for efficiently sending the light beam from that medium to the grating (Abstract) as implied from Magnusson et al. regardless of the diffraction order. Although Magnusson et al. seems to be more concerned with zero-order diffraction, it would have been an obvious modification to use the waveguide layer and grating for other diffraction orders (col. 16, lines 20-25) as implied from

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Magnusson et al. Thus, it would have been obvious, to one having ordinary skill in the art, to incorporate the waveguide layer of Magnusson et al. with the device of Farah.

With regards to claims 38-40, 46, and 47, it is noted that the features upon which applicant relies (i.e., waveguide grating having at least one waveguide layer and at least one grating layer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

With regards to claims 15-35, 41-45, 48-51, and 61-66, these rejections remain standing for the reasons as recited above.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



**EDWARD J. GLICK**  
**SUPERVISORY PATENT EXAMINER**

REPLACEMENT SHEET

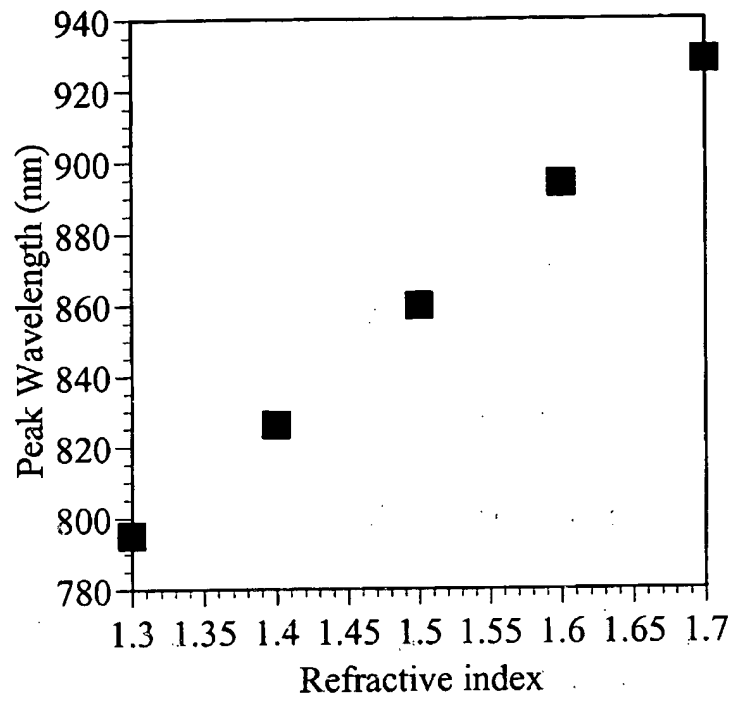


FIG. 22

Approved  
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# REPLACEMENT SHEET

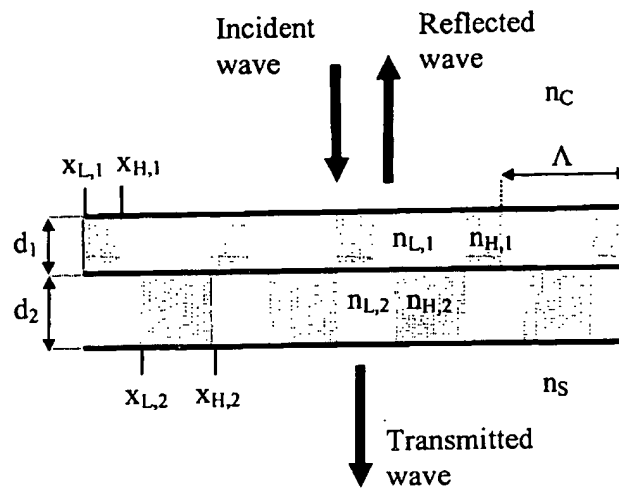


FIG. 26A

Chromosome

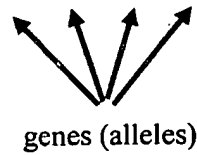
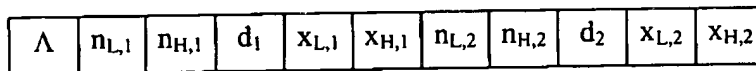


FIG. 26B

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CK  
2/2/04